

What is claimed is:

1. A dielectric device comprising:

first and second impurity regions formed with
predetermined spacing on a semiconductor;

5 a gate insulating film formed on a region between said
first and second impurity regions;

a gate electrode formed on said gate insulating film;

an interlayer insulating film formed on said
semiconductor so as to cover said gate electrode and said gate
10 insulating film and having a contact hole;

a lower electrode layer formed in said contact hole of
said interlayer insulating film and electrically connected
to said gate electrode;

a dielectric film formed on said interlayer insulating
15 film so as to be brought into contact with the upper surface
of said lower electrode layer; and

an upper electrode layer formed on said dielectric film,
said lower electrode layer and said upper electrode
layer being composed of a conductive oxide having a
20 perovskite structure,

said dielectric film being composed of dielectrics
having a perovskite structure.

2. The dielectric device according to claim 1, further
25 comprising

a connecting layer formed under said lower electrode layer in said contact hole for electrically connecting said lower electrode layer to said gate electrode.

5 3. The dielectric device according to claim 1, wherein
said upper electrode layer and said lower electrode
layer are composed of a layered structure conductive oxide,
and

10 said dielectric film is composed of layered structure
dielectrics.

4. The dielectric device according to claim 1, wherein
said upper electrode layer and said lower electrode
layer are composed of a bismuth based system layered
15 structure conductive oxide, and

 said dielectric film is composed of layered structure
dielectrics containing bismuth.

20 5. The dielectric device according to claim 1, wherein
said dielectric film is composed of ferroelectrics.

6. The dielectric device according to claim 1, wherein
said upper electrode layer and said lower electrode
layer are composed of a layered structure conductive oxide
25 containing bismuth, strontium, copper and oxygen, and

said dielectric film is composed of layered structure ferroelectrics containing strontium, bismuth, tantalum and oxygen.

5 7. The dielectric device according to claim 2, further comprising

a diffusion barrier layer provided between said connecting layer and said lower electrode layer.

10 8. The dielectric device according to claim 7, further comprising

a platinum layer provided between said diffusion barrier layer and said lower electrode layer.

15 9. A dielectric device comprising:

a dielectric film composed of layered structure dielectric containing bismuth; and

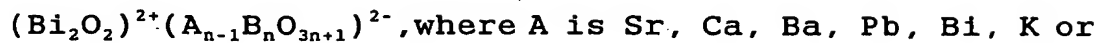
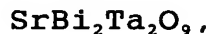
a first electrode layer laminated on one surface of said dielectric film and composed of a bismuth based system
20 layered structure conductive oxide.

10. A dielectric device comprising:

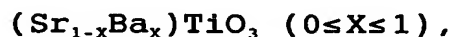
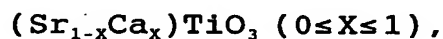
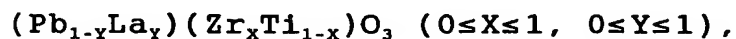
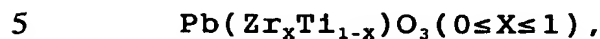
a dielectric film; and

a first electrode layer laminated on one surface of said
25 dielectric film,

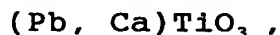
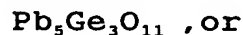
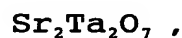
said dielectric film being composed of



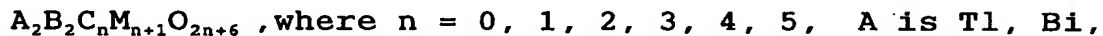
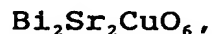
Na, and B is Ti, Ta, Nb, W or V,



10 is Nb, V, Ta, Mo or W, $0 \leq x \leq 1, y = 1 - x, 0 \leq z \leq 1,$



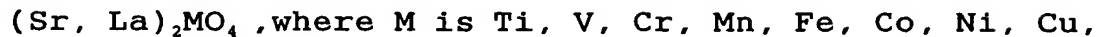
15 said first electrode layer being composed of



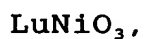
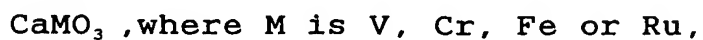
Mg or Cu, B is Ba, C is Ca, and M is Cu,



20 Ru or Ir,



Ru or Ir,



25 $\text{Ba}(\text{Pb}, \text{Bi})\text{O}_3,$

$\text{LnBa}_2\text{Cu}_n\text{O}_{n+4-a}$, where $n = 3, 4$, Ln is Y, La, Pr, Nd, Sm,

Eu, Gd, Td, Dy, Ho, Er, Tm, Yb or Lu,

$(\text{Ba}, \text{A})\text{BiO}_3$, where A is K or Rb,

$\text{Sr}_{1+n}\text{Cu}_n\text{O}_{2n+1}$, where $n = 1, 2, 3, \infty$,

5 ReO_3 , or

M_xWO_3 , where M is H, an alkali metal, an alkaline earth metal, Cu, Ag, In, Tl, Sn or Pb.

11. The dielectric device according to claim 9, further
10 comprising

first and second impurity regions formed with
predetermined spacing on a semiconductor,

said dielectric film being formed on a region between
said first and second impurity regions.

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12. The dielectric device according to claim 9, further
comprising

first and second impurity regions formed with
predetermined spacing on a semiconductor, and

20 a gate insulating film formed on a region between said
first and second impurity regions,

said dielectric film being formed on said gate
insulating film.

25 13. The dielectric device according to claim 9, further

comprising

a second electrode layer laminated on the other surface of said dielectric film,

said second electrode layer having a crystalline
5 structure similar to that of said dielectric film.

14. The dielectric device according to claim 13,
wherein

said second electrode layer is composed of a bismuth
10 based system conductive layered structure oxide.

15. The dielectric device according to claim 13,
wherein

said second electrode layer is composed of
15 $\text{Bi}_2\text{Sr}_2\text{CuO}_6$,

$\text{A}_2\text{B}_2\text{C}_n\text{M}_{n+1}\text{O}_{2n+6}$, where $n = 0, 1, 2, 3, 4, 5$, A is Tl, Bi,
Mg or Cu, B is Ba, C is Ca, and M is Cu,

$(\text{Sr}, \text{La})\text{MO}_3$, where M is Ti, V, Cr, Mn, Fe, Co, Ni, Cu,
Ru or Ir,

20 $(\text{Sr}, \text{La})_2\text{MO}_4$, where M is Ti, V, Cr, Mn, Fe, Co, Ni, Cu,
Ru or Ir,

CaMO_3 , where M is V, Cr, Fe or Ru,

LuNiO_3 ,

$\text{Ba}(\text{Pb}, \text{Bi})\text{O}_3$,

25 $\text{LnBa}_2\text{Cu}_n\text{O}_{n+4-a}$, where $n = 3, 4$, Ln is Y, La, Pr, Nd, Sm,

Eu, Gd, Td, Dy, Ho, Er, Tm, Yb or Lu,

(Ba, A)BiO₃, where A is K or Rb,

Sr_{1+n}Cu_nO_{2n+1}, where n = 1, 2, 3, ∞)

ReO₃, or

- 5 M_xWO₃, where M is H, an alkali metal, an alkaline earth metal, Cu, Ag, In, Tl, Sn or Pb.

16. The dielectric device according to claim 10, further comprising

- 10 a second electrode layer laminated on the other surface of said dielectric film,

said second electrode layer being composed of

Bi₂Sr₂CuO₆,

- A₂B₂C_nM_{n+1}O_{2n+6}, where n = 0, 1, 2, 3, 4, 5, A is Tl, Bi,
15 Mg or Cu, B is Ba, C is Ca, and M is Cu,

(Sr, La)MO₃, where M is Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Ru or Ir,

(Sr, La)₂MO₄, where M is Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Ru or Ir,

- 20 CaMO₃, where M is V, Cr, Fe or Ru,

LuNiO₃,

Ba(Pb, Bi)O₃,

LnBa₂Cu_nO_{n+4-a}, where n = 3, 4, Ln is Y, La, Pr, Nd, Sm,

Eu, Gd, Td, Dy, Ho, Er, Tm, Yb or Lu,

- 25 (Ba, A)BiO₃, where A is K or Rb,

$\text{Sr}_{1+n}\text{Cu}_n\text{O}_{2n+1}$, where $n = 1, 2, 3, \infty$,

ReO_3 , or

M_xWO_3 , where M is H, an alkali metal, an alkaline earth metal, Cu, Ag, In, Tl, Sn or Pb.

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17. The dielectric device according to claim 13,
further comprising

first and second impurity regions formed with
predetermined spacing on a semiconductor, and

10 a gate insulating film formed on a region between said
first and second impurity regions,

said second electrode layer being formed on said gate
insulating film.